

Flight Scientist Report
Friday 03/12/2021 ACTIVATE RF53

Flight Type: Statistical Survey Flight

Flight Route: KLF1 KECG OXANA 34/-73.2517 32.3/-72.7821 34/-73.2517 OXANA KECG KLF1

Special Notes: This day had low clouds to the southeast, but more scattered and different than a typical cold air outbreak set-up. We forecasted that the clouds were be in higher presence the earlier we could fly, so we opted for a 730 am take off (earlier than normal). We also forecasted smoke closer to coast.

King Air

Pilot report (Glenn Jamison): 0737-1058(L), 3.4 hrs

Sequenced takeoff to follow HU-25 due to forecast winds aloft

Uninterrupted climb to final altitude of FL280

Predominantly VMC and smooth air. Approximately 1-2 minutes of cloud penetration at ~ FL230; some intermittent chop at altitude in vcty of OXANA.

Steady winds aloft at 40-50 kts from NW

Left turn/reversal at end-point per researchers' request.

4x dropsondes deployed at prebriefed positions.

Flight scientist report (Taylor Shingler): This flight was the first of two repeated flight tracks on the same day. The route was flown out of AR8 and was targeting a CALIPSO track for an overpass on the second flight. A mixture of low clear air and low level cumulus was sampled along the track. Five sondes were dropped in total with three along the track. All instruments on the UC12 were fully operational.

Falcon

Pilot report (Greg Slover): Takeoff 0735, Landing 1102, Duration 3.5

ACTIVATE Science flight from KLF1 ECG OXANA 34/-73.2517 32.3/-72.7821 34/-73.2517 OXANA

ECG KLF1. Altitudes flown were from 500' over water, 1000' min over land up to about 6500'

MSL above the cloud layers. Clouds were thin, no more than 1000' thick and scattered

throughout the route. Route flown as planned with a few deviations from centerline when

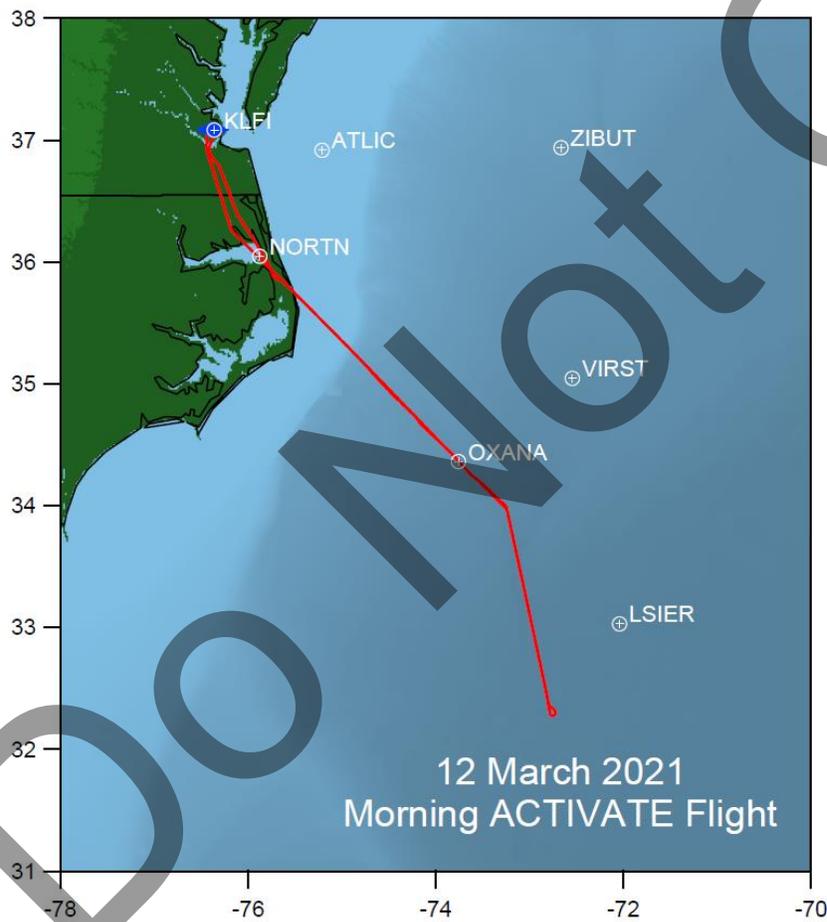
needed to ensure 3-min legs for wind calibration. Flown in conjunction with NASA528 at high

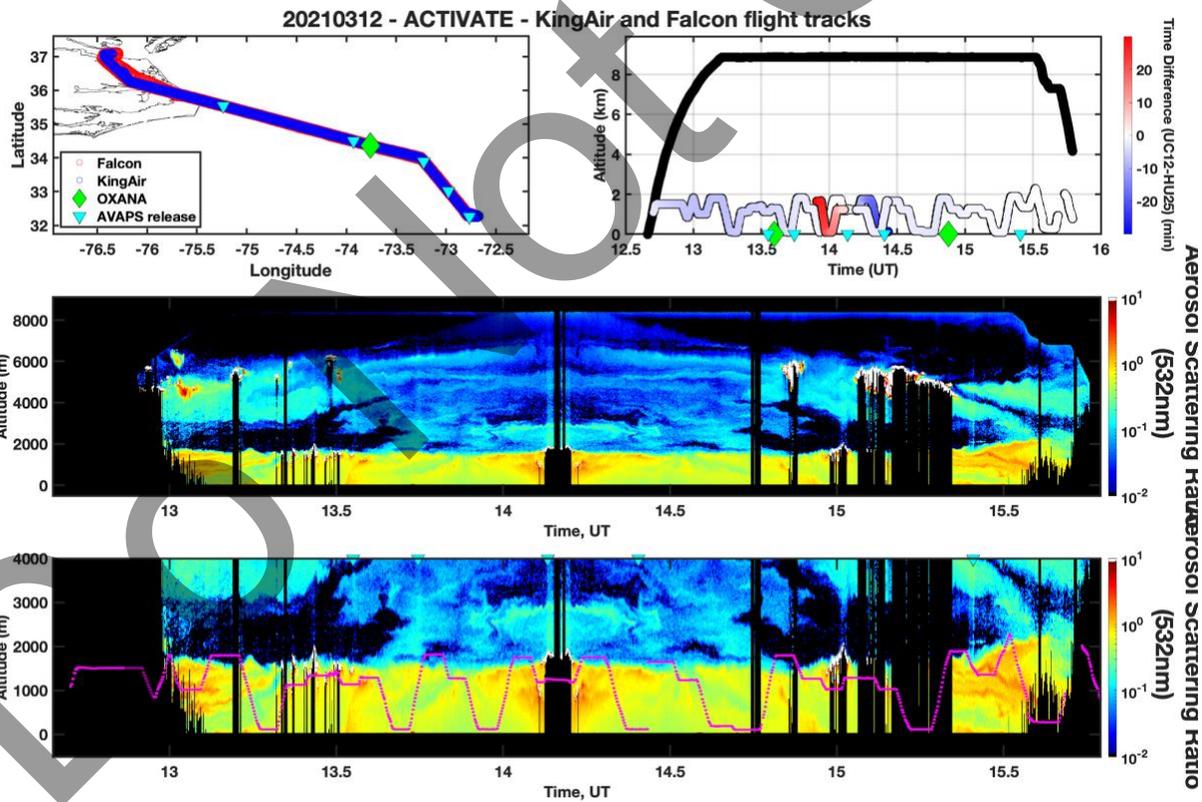
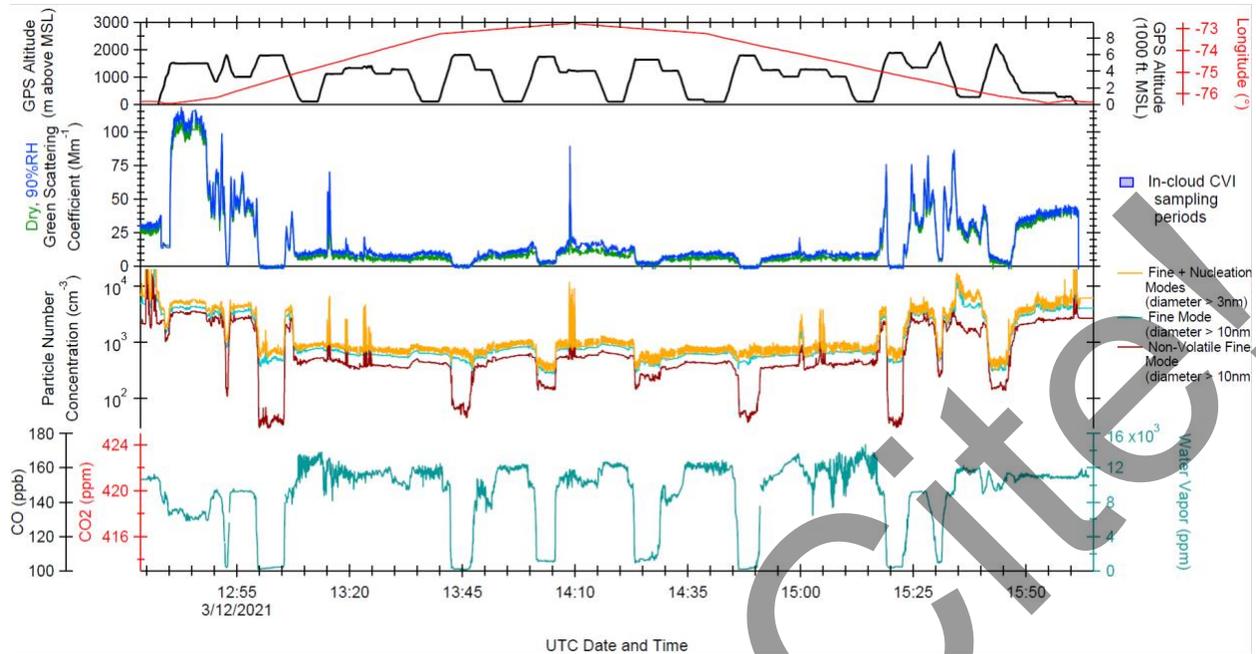
altitude. [https://airbornescience.nasa.gov/flight_reports/HU-25A_Guardian_-](https://airbornescience.nasa.gov/flight_reports/HU-25A_Guardian_-_LaRC_524_03_12_21?web=1&wdLOR=c5AD71DAA-7B90-46D8-991E-491BA8F972F0)

[_LaRC_524_03_12_21?web=1&wdLOR=c5AD71DAA-7B90-46D8-991E-491BA8F972F0](https://airbornescience.nasa.gov/flight_reports/HU-25A_Guardian_-_LaRC_524_03_12_21?web=1&wdLOR=c5AD71DAA-7B90-46D8-991E-491BA8F972F0)

Flight scientist report (Ewan): Successful sampling of smoke overland and near coastline on both flights. No indication of smoke offshore in the area where clouds were sampled.

Generally, quite clean and consistent aerosol conditions far offshore. Clouds were very intermittent and appeared to be forming clusters and linear features – unfortunately the linear features did not line up with the flight track, but we could see them extending off into the distance. Both flights were similar with respect to cloud coverage and general cloud conditions. Regarding ensemble mark-ups: The markup was a bit challenging to group the legs into modules because we tried to sample clouds when clouds were present. This meant that a few of the legs were rearranged or skipped. It was definitely one of those types of days where it would become cloudy just after we switched to the clear module or vice versa.



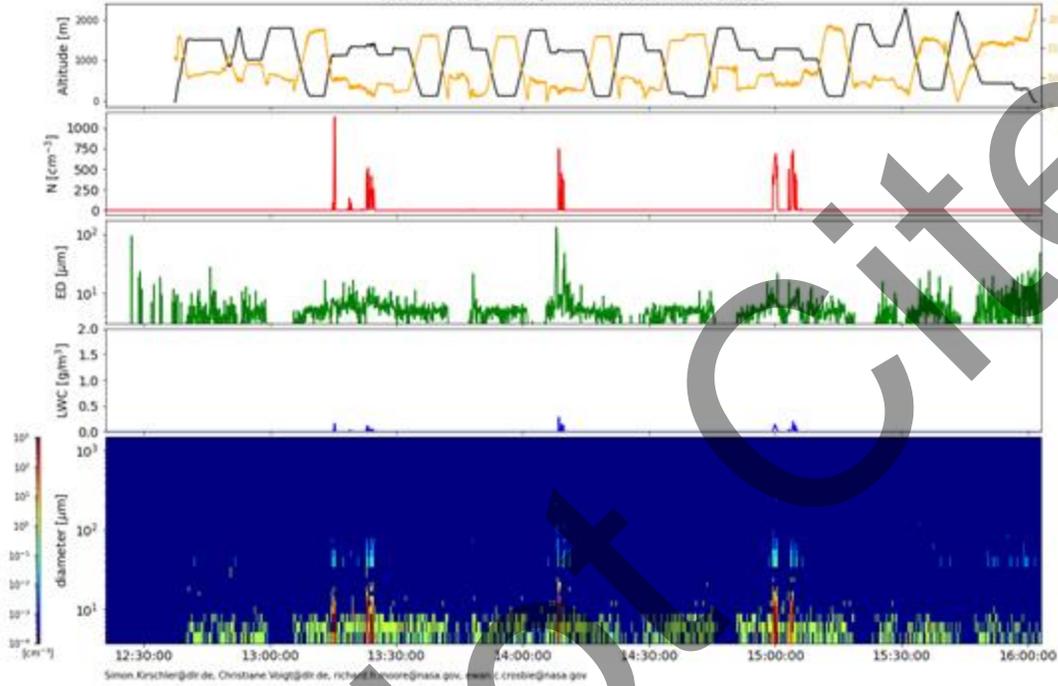


Quicklook ACTIVATE Cloud Probes (FCDP & 2DS) Quicklook

preliminary data, only for quicklook use
Simon Kirschler, Christiane Voigt, Richard Moore, Ewan Crosbie



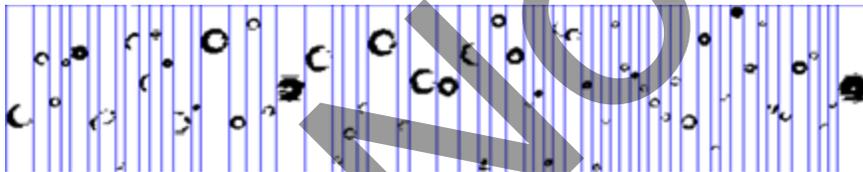
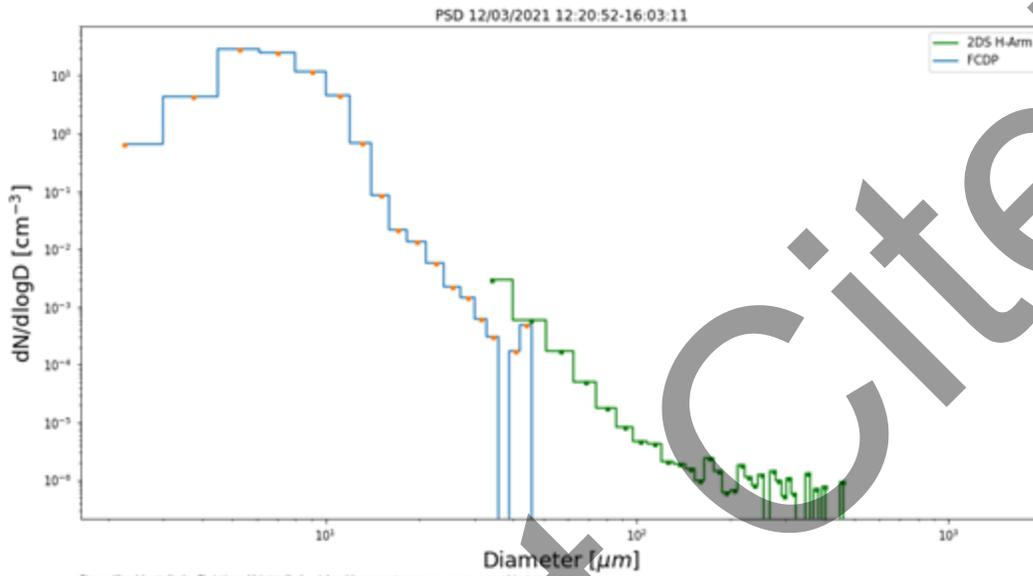
Cloud Probes (FCDP & 2DS) Quicklook 12/03/2021 12:20:52-16:03:11



Simon.Kirschler@dlr.de, Christiane.Voigt@dlr.de, richard.moore@nasa.gov, ewan.crosbie@nasa.gov

PSD ACTIVATE

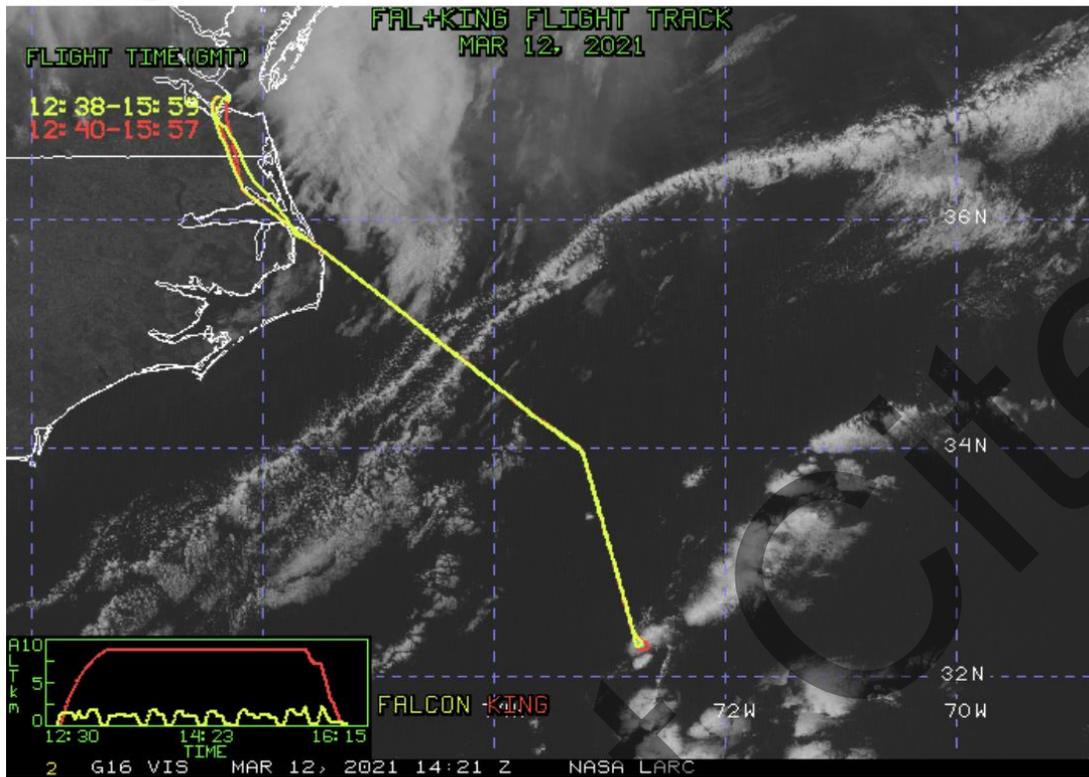
preliminary data, only for quicklook use
Simon Kirschler, Christiane Voigt, Richard Moore, Ewan Crosbie



Only pure liquid clouds

NASA-LaRC Clouds Group GOES-16 Quicklook Images for Flight 53, 14:21 UTC Mar 12, 2021

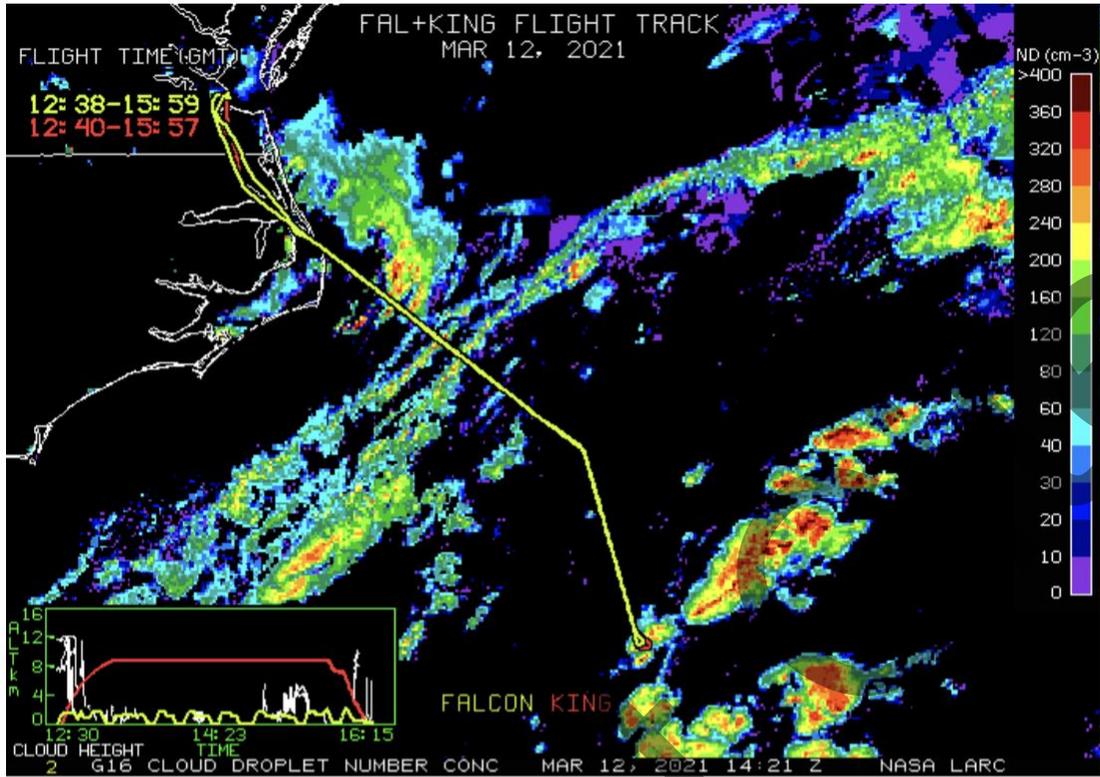
Visible Image



Cloud Phase



Cloud Droplet Number Concentration (cm-3)



Cloud-Top Height (Kft-ASL)

